

SEAMAP-SA Shallow Water Trawl Survey Cruise Report Summer 2005

The summer cruise for the SEAMAP-South Atlantic Shallow Water Trawl Survey began on July 10 and was completed on July 28, 2005. A total of one hundred and two stations were sampled in the twenty-four shallow coastal strata in the South Atlantic Bight (Figure 1).

Preliminary analysis on species of primary importance was completed and is as follows:

General Observations:

A total of 127 species or genera were identified in summer trawls (Table 1). *Micropogonias undulatus* was the most abundant species, constituting 27% of total abundance, followed by *Leiostomus xanthurus* (10%), *Farfantepenaeus aztecus* (9%), and *Larimus fasciatus* (7%).

Abundance of individuals collected ($n=163,671$ individuals, $\bar{x}/\text{tow}=1364$ individuals) decreased slightly from the level of abundance observed in Summer 2004 (Figure 2). The biomass of miscellaneous invertebrates ($n=858$ kg, $\bar{x}/\text{tow}=8.4$ kg), including cannonball jellies, continued to be low.

Sciaenids:

Patterns of abundance from SEAMAP trawls in the SAB generally reflect fluctuations in the abundance of two members of the sciaenid family, Atlantic croaker and spot (Figure 3). Atlantic croaker and spot were the numerically dominant priority species and together constituted approximately 37% of all abundance. The Atlantic croaker, *Micropogonias undulatus*, ($n=44,367$ individuals, $\bar{x}/\text{tow}=435.0$ individuals) ranked first in abundance overall, and the spot, *Leiostomus xanthurus*, ($n=16,700$ individuals, $\bar{x}/\text{tow}=163.7$ individuals) was the second most numerous species collected. Other sciaenid species of interest include the southern kingfish, *Menticirrhus americanus*, ($n=3760$ individuals, $\bar{x}/\text{tow}=36.9$ individuals) and the weakfish, *Cynoscion regalis*, ($n=3549$ individuals, $\bar{x}/\text{tow}=34.8$ individuals).

Otoliths were collected from specimens of weakfish ($n=104$), Atlantic croaker ($n=243$), and southern kingfish ($n=363$). Additionally, gonad samples were collected for verification of onboard maturity assessments.

Mackerel:

The abundance of king mackerel, *Scomberomorus cavalla*, (n=90, $\bar{x}/\text{tow}=0.9$) in Summer 2005 exceeded numbers of individuals taken in Summer 2004. King mackerel were absent from collections made in Raleigh Bay, Long Bay, and South Carolina. Abundance of *S. cavalla* was greatest in waters off Florida (n=71, $\bar{x}/\text{tow}=3.7$).

The abundance of Spanish mackerel, *S. maculatus*, (n=212, $\bar{x}/\text{tow}=2.1$) decreased from levels observed in 2004, a trend noted since 2001 (Figure 4). Spanish mackerel were taken in all regions; abundance of *S. maculatus* was greatest in waters off Georgia (n=112, $\bar{x}/\text{tow}=4.3$).

Penaeid Shrimp:

The abundance of brown shrimp, *Farfantepenaeus aztecus*, in Summer 2005 (n=14,158, $\bar{x}/\text{tow}=138.8$) exceeded all collections of that species taken during summer cruises. *F. aztecus* were taken from strata in all regions (Figure 5), with the highest mean catches per tow taken in Long Bay (n=6362, $\bar{x}/\text{tow}=374.2$). Over 99% of the females sampled had undeveloped gonads (Figure 6). Fewer than 1% of the female specimens were found to be mated. Male white shrimp were found in all stages of development (Figure 5). Approximately 73% of the male brown shrimp had late developing spermatophores; however, less than 1% had ripe spermatophores.

The white shrimp, *Litopenaeus setiferus*, was the second most abundant shrimp (n=2039, $\bar{x}/\text{tow}=20.0$) in summer collections. The greatest mean catch per tow was observed in waters off Florida (n=1429, $\bar{x}/\text{tow}=75.2$). *L. setiferus* was absent from trawls made in Raleigh and Onslow Bays. Female white shrimp were found in all stages of development, with the majority (57%) having developing ovaries. Less than 1% of female white shrimp collected were mated; however those found to be mated also had ripe ovaries. Approximately 81% of the male white shrimp had ripe spermatophores.

Catches of the pink shrimp, *Farfantepenaeus duorarum*, (n=7, $\bar{x}/\text{tow}=0.07$) in Summer 2005 were low, decreasing from levels observed in Summer 2004. Pink shrimp were taken only in Raleigh Bay. All of the female pink shrimp taken had undeveloped ovaries and none were found to be mated. No male pink shrimp were taken in SEAMAP trawls.

Other Observations:

The following specimens were retained and transported to SCMRD for cooperating and other investigations:

- Two species of *Menticirrhus* for age and growth research
- Specimens of *Micropogonias undulatus*, *Selene setapinnis*, *Caranx crysos*, *Oligoplites saurus*, *Chloroscombrus chrysurus*, *Prionotus carolinus*, *Prionotus scitulus*, and *Prionotus evolans* taken from each region for parasite load assessment
- Specimens of *Micropogonias undulatus* taken from each region for stock identification based on parasite load
- *Haemulon aurolineatum* for age-growth research (MARMAP)
- *Paralichthys albigutta* and *Paralichthys squamilentus* for genetic analysis
- Weakfish and bluefish specimens for age and growth research
- Specimens of *Trinectes maculatus* and *Etropus crossotus* for fecundity study
- *Symphurus plagiatus* for species verification

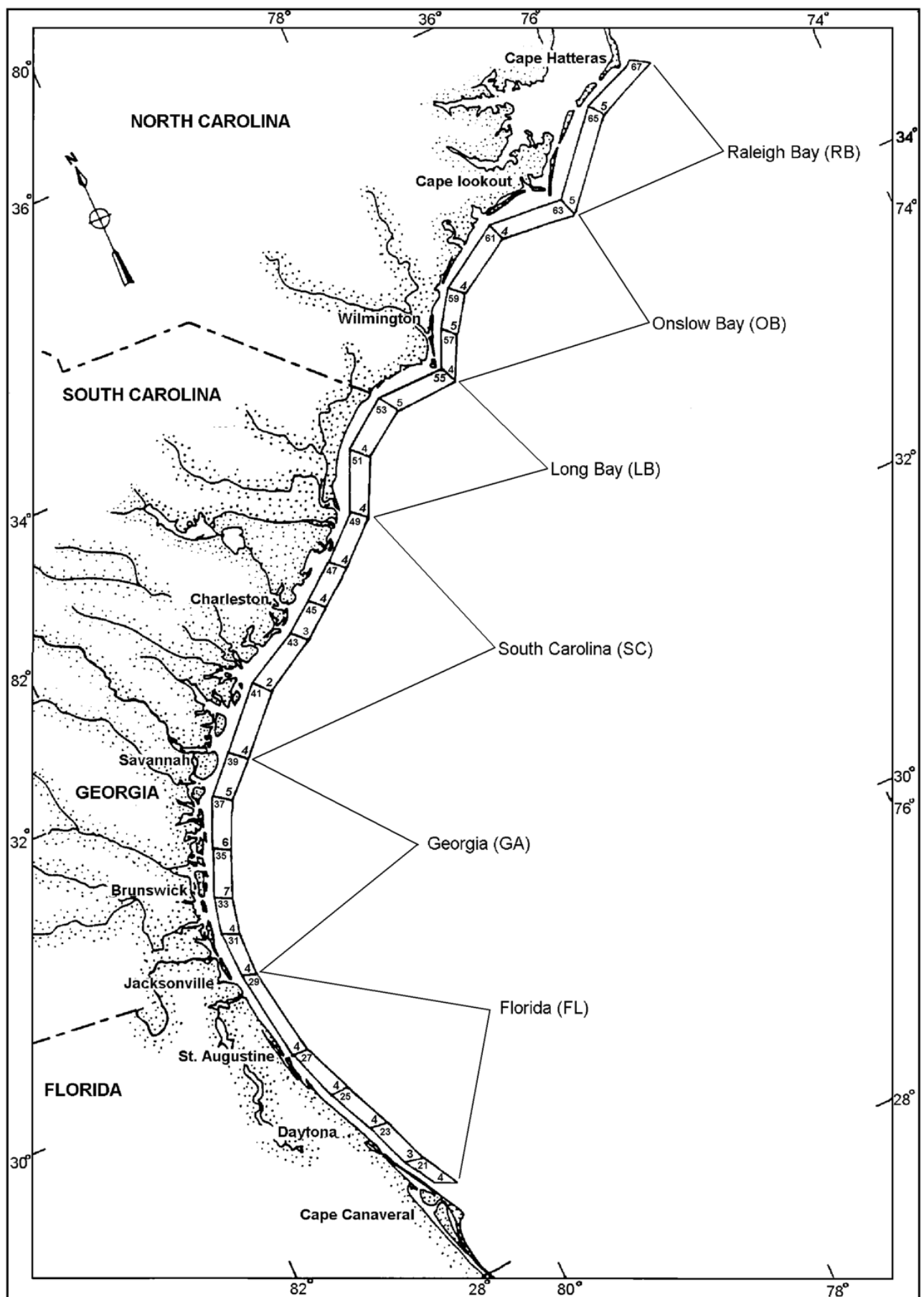


Figure 1. SEAMAP strata sampled in 2005. Stratum number is indicated at the top of each rectangle and number of trawls towed is located in the lower portion of each stratum.

Table 1. Abundance and biomass of species collected in Summer 2005.

Rank	Species name	Individuals	Weight (kg)
1	Micropogonias undulatus	44367	2390.705
2	Leiostomus xanthurus	16700	1353.455
3	Farfantepenaeus aztecus	14158	183.723
4	Larimus fasciatus	10726	724.353
5	Lagodon rhomboides	6638	309.682
6	Stenotomus sp.	6549	138.448
7	Stellifer lanceolatus	6427	110.768
8	Cynoscion nothus	6380	399.232
9	Chloroscombrus chrysurus	5382	251.738
10	Prionotus carolinus	4753	72.244
11	Lolliguncula brevis	3963	35.457
12	Menticirrhus americanus	3760	435.748
13	Cynoscion regalis	3549	312.329
14	Selene setapinnis	3276	20.541
15	Trichiurus lepturus	3200	148.081
16	Synodus foetens	2595	212.007
17	Opisthonema oglinum	2075	55.173
18	Litopenaeus setiferus	2039	65.366
19	Orthopristis chrysoptera	1450	111.213
20	Rhizoprionodon terraenovae	1336	421.886
21	Ovalipes stephensoni	1306	11.703
22	Peprilus alepidotus	1274	582.145
23	Callinectes similis	1249	10.132
24	Peprilus triacanthus	1158	261.626
25	Anchoa hepsetus	1100	12.934
26	Ovalipes ocellatus	655	15.835
27	Bairdiella chrysoura	638	42.769
28	Scophthalmus aquosus	557	15.779
29	Gymnura micrura	427	240.979
30	Paralichthys dentatus	406	55.486
31	Trinectes maculatus	385	10.312
32	Loligo sp.	335	6.966
33	Prionotus evolans	330	6.913
34	Ancylopsetta quadrocellata	258	12.485
35	Etropus crossotus	221	5.138
36	Anchoa lyolepis	216	0.215
37	Decapterus punctatus	215	10.825
38	Scomberomorus maculatus	212	39.362
39	Citharichthys macrops	211	3.577
40	Anchoa mitchilli	186	0.326
41	Callinectes sapidus	172	21.478
42	Prionotus scitulus	169	2.733
43	Sphyrna tiburo	168	393.189

Rank	Species name	Individuals	Weight (kg)
44	Sphyrna guachancho	168	37.690
45	Portunus gibbesii	146	0.796
46	Dasyatis sayi	138	113.470
47	Selene vomer	132	2.128
48	Squilla neglecta	124	1.505
49	Squilla empusa	122	120.557
50	Menticirrhus littoralis	104	22.227
51	Pomatomus saltatrix	102	12.068
52	Scomberomorus cavalla	90	10.225
53	Eucinostomus sp.	90	1.172
54	Caranx crysos	76	3.720
55	Portunus spinimanus	74	1.028
56	Prionotus tribulus	66	2.430
57	Etropus cyclosquamus	64	0.588
58	Myliobatis freminvillei	60	32.491
59	Centropristis striata	54	3.333
60	Dasyatis centroura	53	282.354
61	Sphoeroides maculatus	49	3.974
62	Chaetodipterus faber	47	4.463
63	Stephanolepis hispidus	47	0.502
64	Paralichthys lethostigma	44	28.706
65	Brevoortia tyrannus	42	2.774
66	Hepatus epheliticus	39	1.203
67	Chilomycterus schoepfi	36	6.569
68	Trachinotus carolinus	35	6.894
69	Syacium papillosum	27	0.263
70	Harengula jaguana	27	1.068
71	Sphyrna lewini	23	22.189
72	Mustelus canis	20	4.724
73	Sardinella aurita	20	0.327
74	Echeneis naucrates	20	2.732
75	Citharichthys spilopterus	20	0.211
76	Libinia dubia	20	0.369
77	Rachycentron canadum	19	19.281
78	Arenaeus cribrarius	19	0.794
79	Oligoplites saurus	16	1.397
80	Carcharhinus brevipinna	16	36.681
81	Prionotus salmonicolor	15	0.232
82	Pagurus pollicaris	15	0.153
83	Portunus sayi	15	0.107
84	Rhinoptera bonasus	13	42.458
85	Hippocampus erectus	13	0.110
86	Paralichthys albigutta	13	2.145

Rank	Species name	Individuals	Weight (kg)
87	Menippe mercenaria	13	1.025
88	Neopanope sayi	13	0.063
89	Hypleurochilus geminatus	12	0.017
90	Caretta caretta	11	473.130
91	Pilumnus sayi	11	0.128
92	Raja eglanteria	8	2.990
93	Persephona mediterranea	8	0.108
94	Umbrina coroides	7	0.303
95	Farfantepenaeus duorarum	7	0.144
96	Octopus vulgaris	7	0.681
97	Libinia emarginata	6	0.110
98	Dasyatis americana	5	7.220
99	Haemulon aurolineatum	5	0.150
100	Carcharhinus acronotus	4	25.310
101	Syngnathus louisianae	4	0.064
102	Mobula hypostoma	4	247.530
103	Callinectes ornatus	4	0.040
104	Archosargus probatocephalus	3	5.500
105	Sarda sarda	3	0.073
106	Scorpaena brasiliensis	3	0.102
107	Ginglymostoma cirratum	2	145.000
108	Diplectrum formosum	2	0.103
109	Lepidochelys kempfi	2	22.42
110	Aluterus schoepfi	2	0.029
111	Acanthostracion quadricornis	2	0.303
112	Lagocephalus laevigatus	2	0.025
113	Pagurus impressus	2	0.231
114	Pagurus longicarpus	2	0.007
115	Galeocerdo cuvieri	1	1.730
116	Narcine brasiliensis	1	0.470
117	Aetobatus narinari	1	21.040
118	Opsanus tau	1	0.107
119	Porichthys plectrodon	1	0.034
120	Fistularia tabacaria	1	0.028
121	Centropristis ocyurus	1	0.014
122	Centropristis philadelphica	1	0.080
123	Calamus leucosteus	1	0.910
124	Dactylopterus volitans	1	0.008
125	Paralichthys squamilentus	1	0.034
126	Symphurus plagiusa	1	0.029
127	Rimapenaeus constrictus	1	0.003

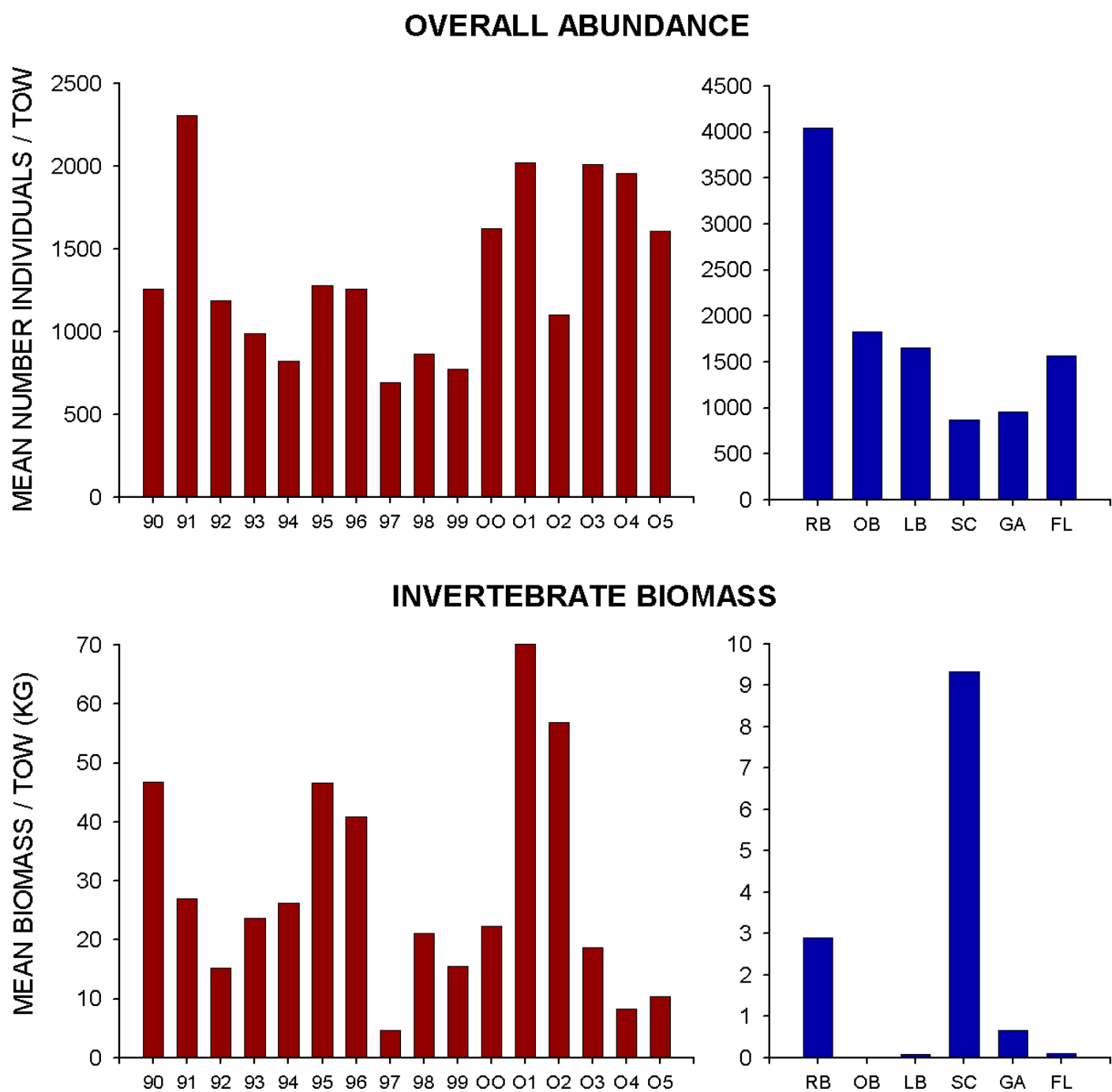


Figure 2. Annual and regional (2005) summer estimates of overall abundance and invertebrate biomass from inner strata

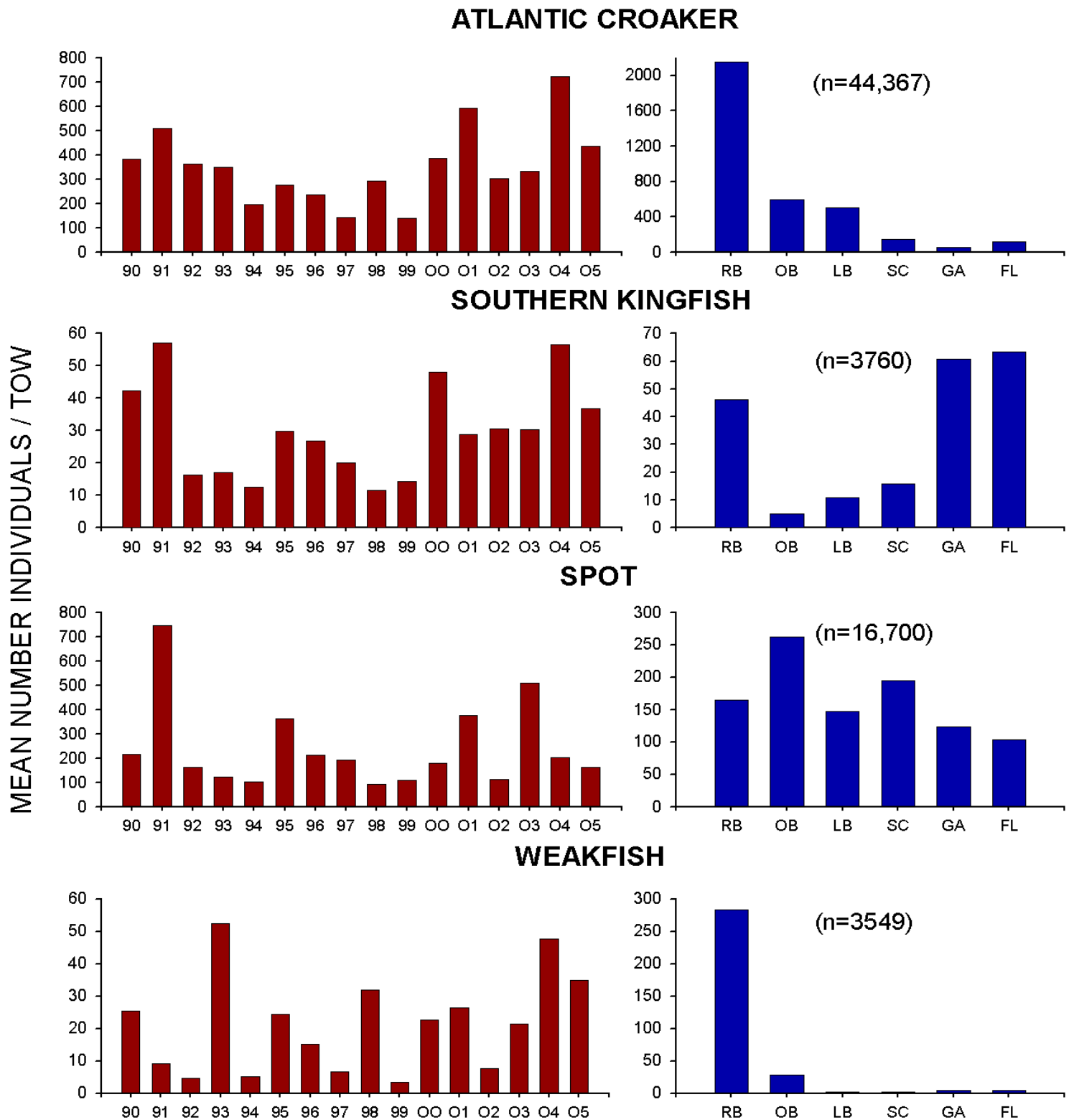


Figure 3. Annual and regional (2005) summer abundances of numerically dominant sciaenids from inner strata

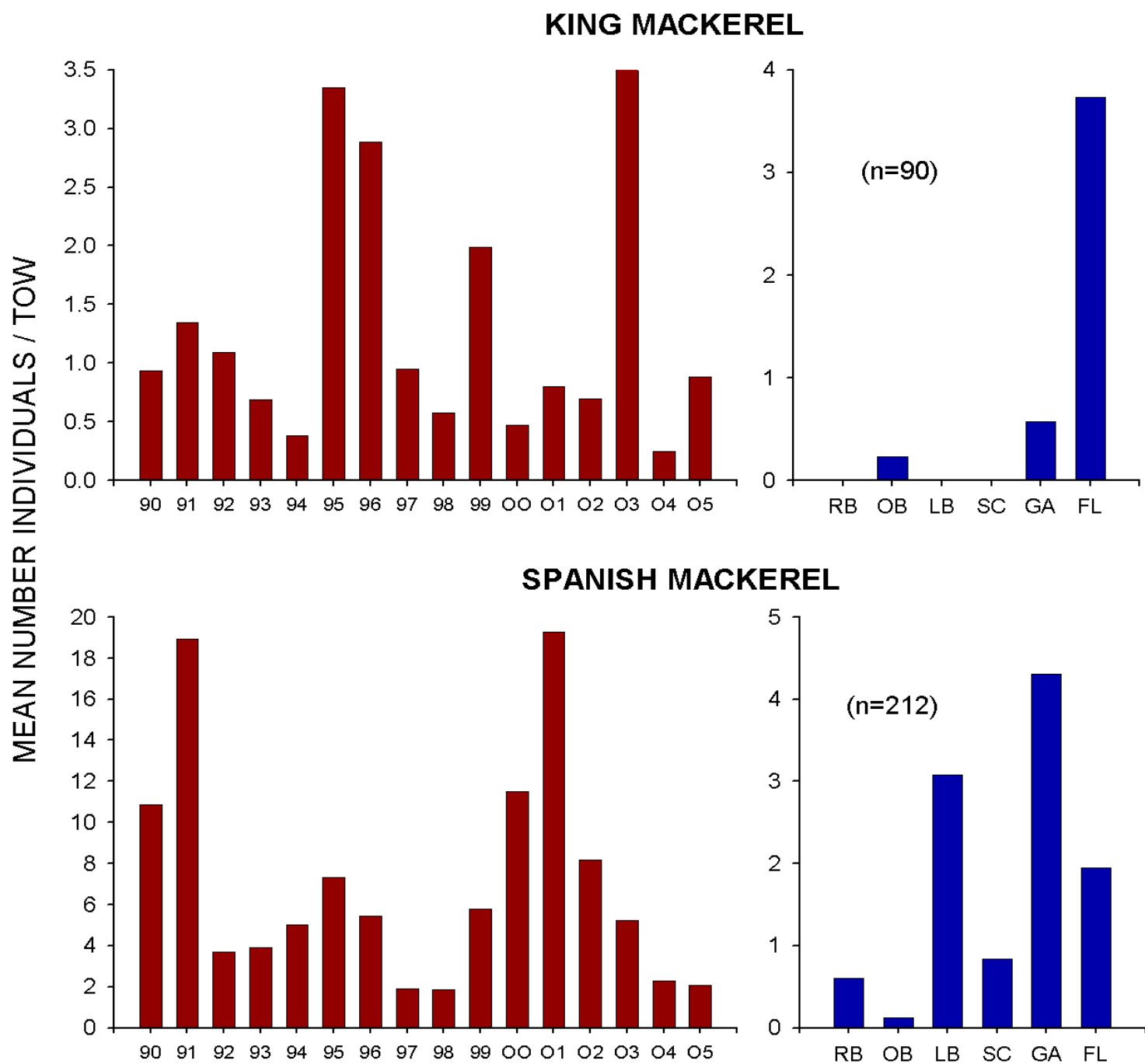


Figure 4. Annual and regional (2005) summer abundances of mackerels from inner strata

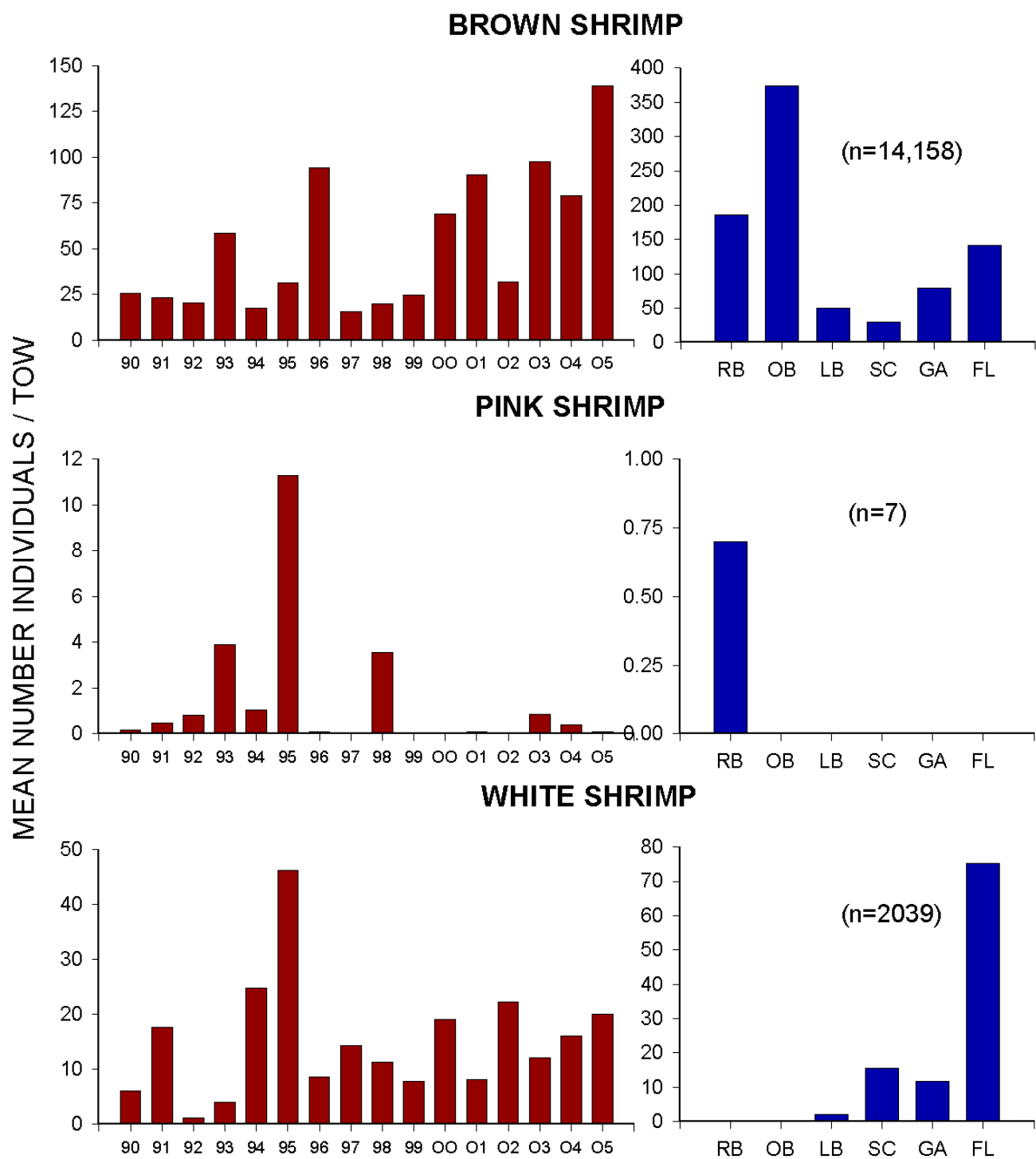


Figure 5. Annual and regional (2005) summer shrimp abundances from inner strata

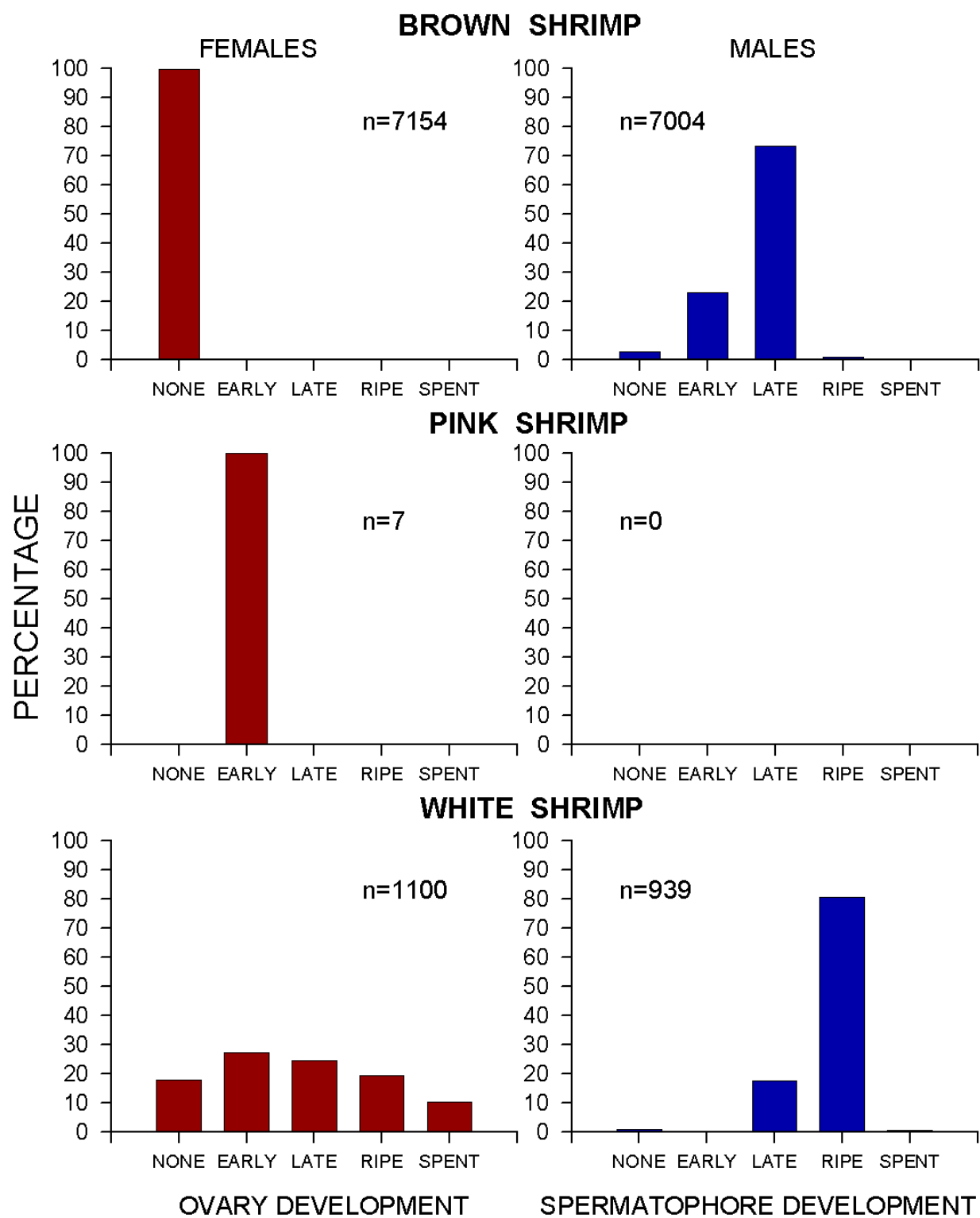


Figure 6. Shrimp gonadal development - Summer 2005